

On *Pardosa schenkeli* (Araneae, Lycosidae) and its presence in Germany and Poland

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Abstract: The wolf spider *Pardosa schenkeli* Lessert, 1904 was since long regarded as occurring in Germany and Poland but is excluded from the recent checklist of spiders found in these countries. Re-examination of material collected in Germany and Poland, respectively, verifies its presence in both countries. Characters for distinguishing *P. schenkeli* and its ally *P. bifasciata* (C.L. Koch, 1834) are given and illustrated.

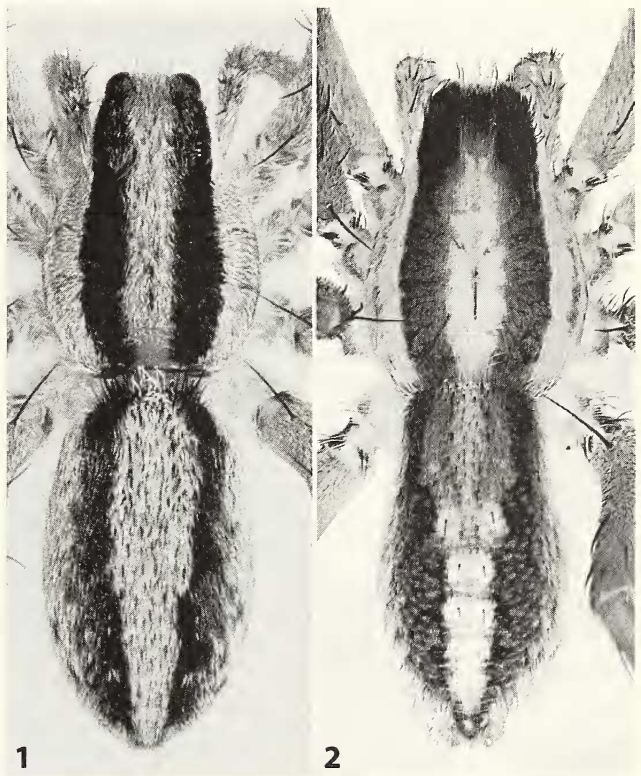
Key words: faunistics, identification, *Pardosa bifasciata*

The wolf spider species *Pardosa schenkeli* Lessert, 1904 belongs to the *Pardosa bifasciata* group (sensu ZYUZIN 1979), which encompasses a number of species, all within the Palearctic region. Among them, *P. schenkeli* seems to have the widest distribution, being recorded from Scandinavia (HAUGE & KVAMME 1983, KRONESTEDT 2005) to Kamchatka (MIKHAILOV 1997).

The recent checklist of spiders found in Central Europe (BLICK et al. 2004) recognises *Pardosa schenkeli* as only occurring in Switzerland and Austria (the other countries included in this checklist are Belgium, the Netherlands, Germany, Czech Republic, Slovakia and Poland). The grounds for this are that previous records (sub *Pardosa/Passiena/Lycosa calida* or *schenkeli*) from Germany and Poland were either regarded as misidentifications or not taken into account (Blick pers. commn).

In connection with a report on the presence of *P. schenkeli* in Sweden (KRONESTEDT 2005), I tried to find out what is known about the occurrence of this species in Central Europe. The present note will mainly focus on the situation in Germany and Poland.

Being originally described from material from Switzerland (Valais: Arolla, 46°01'24"N, 7°28'54"E: LESSERT 1904), *P. schenkeli* has been found in other localities in Valais/Wallis (3♂ 16♀ from Hueten,



Figs 1-2: *Pardosa schenkeli* female habitus: 1 – living specimen, 2 – specimen in ethanol. Both from Sweden: Dalarna

46°01'10"N, 7°44'46"E, leg. R. DE LESSERT, in Muséum d'histoire naturelle de Genève, MHNG, here re-examined) but not outside this canton (cf. map in MAURER & HÄNGGI 1990). DAHL (1908) was the first to report the presence of this species (sub *Lycosa calida* Blackwall, 1852) in Germany together with finds in present Poland and Lithuania. Records attributed to *Pardosa calida* from Poland

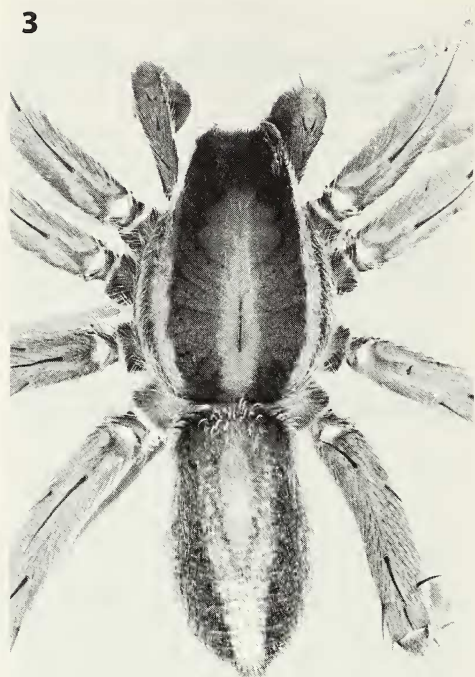
were listed in PRÓSZYŃSKI & STAREGA (1971) but these and subsequent records were later assigned to *Pardosa bifasciata* (C.L. Koch, 1834), and consequently *P. schenkeli* was not included in the recent checklist of Polish spiders (STAREGA 2004). TONGIORGI (1966) illustrated the male palp and the epigyne of *P. schenkeli* from material collected in France (previously housed in the Muséum national d'Histoire naturelle, Paris, now in the Museum of Comparative Zoology, Cambridge, Mass., USA – label without specified locality). This species has recently also been reported for the first time from Austria (Ötztal Alps, Nauders, 46°54'23"N, 10°30'18"E, Bazallerkopf: THALER 2000) and from Italy (Aosta Valley, Ayas Valley, Fiery, 45°51'44"N, 7°43'51"E: ISAIA 2006].

A long-lasting confusion has existed concerning the name *Pardosa calida*. SIMON (1937: 1130) treated it as a junior synonym of *P. bifasciata*, following LESSERT (1910: 534), while DAHL (1908) and DAHL & DAHL (1927) regarded it as a senior synonym of *P. schenkeli*. *P. calida* was described by BLACKWALL (1852, sub *Lycosa*) from one(?) male taken at Interlaken, Berner Oberland. Neither *P. bifasciata* nor *P. schenkeli* were, however, mapped from this canton (MAURER & HÄNGGI 1990). TONGIORGI (1966) meant that the description of *Lycosa calida* suits either *P. bifasciata* or *P. schenkeli* equally well, and he, in accordance with LESSERT and SIMON, regarded *P. calida* as a synonym of *P. bifasciata*. In his detailed description of *Lycosa calida*, BLACKWALL (1852) mentioned that the carapace has a dark brown colour and that the femora of the anterior leg pair are dark brown at the base. This speaks in favour of *L. calida* being conspecific with *P. bifasciata*. Contrarily, MAURER & HÄNGGI (1990) listed *Lycosa calida* under *Pardosa schenkeli*.

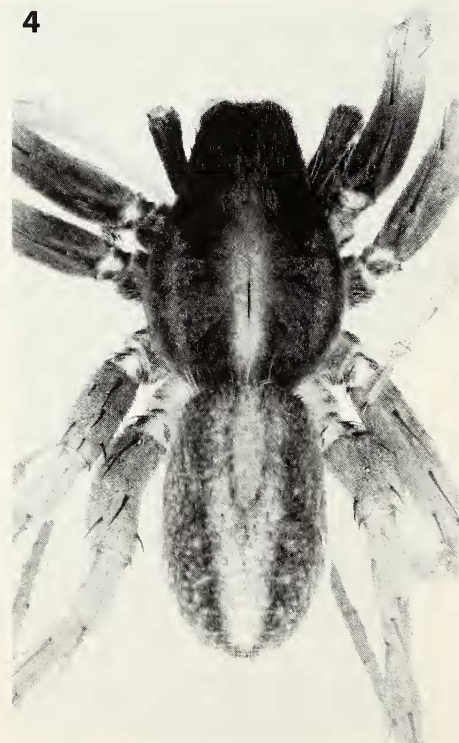
Re-examination of material in the Museum für Naturkunde, Berlin (ZMB) and Swedish Museum of Natural History, Stockholm (NHRS) has verified the occurrence of *P. schenkeli* in the present boundaries of Germany and Poland as well as in Lithuania. Due to the apparently fragmentary occurrence of the species in these countries, its status there should be further explored. An inclusion in the national red lists should be considered.

Localities for *Pardosa schenkeli* in Germany

DAHL (1908, p. 428: sub *Lycosa calida*) mentioned two localities (Niesky/Lausitz and Limburg/Hessen-Nassau) based on material in the collection of H. Zimmermann in ZMB. Material from one of these localities has now been re-examined and the identification confirmed: Saxony, Niesky (51°17'33"N, 14°49'15"E),



Figs 3-4: Male habitus (specimens in ethanol);
3 – *Pardosa schenkeli*. 4 – *P. bifasciata*. Specimens from
Sweden: Dalarna (3) and Gotland (4)



28 May 1868: 3♂ 3♀ (ZMB 5725); Niesky, 2♂ 1♀ (labelled *P. bifasciata*, donated by Zimmermann) (NHRS: Collectio Thorell 243/1513b).

TRETZEL (1952) recorded two specimens of *Pardosa schenkeli* (sub *Lycosa calida*) together with numerous *P. (sub L.) bifasciata* from the Erlangen area in Bavaria. The locality for these two specimens was situated “im östlichen Bezirk des Meilwaldes, südlich der Strasse nach Spardorf”. The habitat was a spot of heath with small pines and heather on ground of very dry fine sand, a habitat similar to the conditions under which *P. schenkeli* has been found in other places. Somewhat later, TRETZEL (1954), referring to the same material, mentioned only one specimen of “*calida*”, a male. BLICK & SCHEIDLER (1991: 38) commented that Tretzel's record of *P. schenkeli* should be attributed to *P. bifasciata* (according to personal information from O. von Helversen). When searching for Tretzel's collection, it appeared that it had been deposited in the Zoologische Staatssammlung in Munich. A search for material labelled “*Lycosa calida*” yielded one male, regrettably a subadult specimen which had on some occasion been dried out. Thus, the specimen was impossible to identify to species. The presence of *P. schenkeli* in Bavaria still needs to be ascertained.

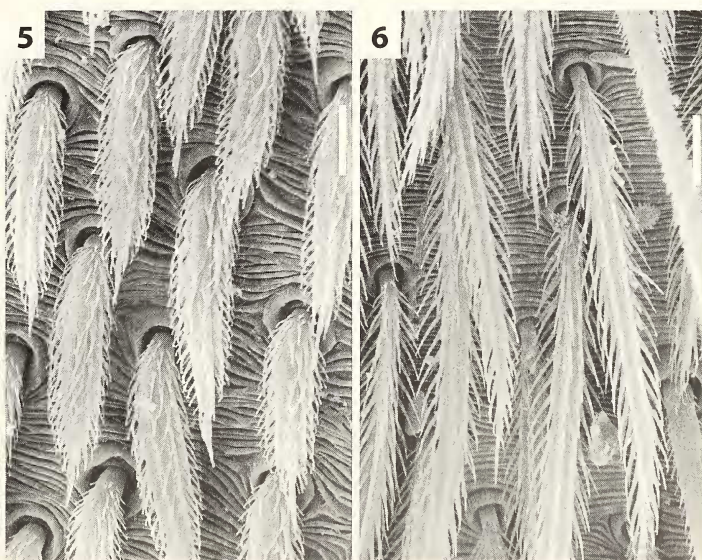
HERZOG (1968) recorded *P. (sub Passiena) schenkeli* from an inland dune area on Pfaffenberge close to Lübben (51°56'29"N, 13°53'53"E) in Brandenburg. This record has later been referred to as *Pardosa bifasciata* (PLATEN et al. 1999). Herzog's collection is in the care of Dr Peter Sacher who there found one remaining specimen marked “*Passiena schenkeli*”. After softening, the specimen (which had been dried out) turned out to be correctly identified (an adult male with palps missing, but with hair covering on the abdominal venter as in *P. schenkeli*).

A presence of *P. schenkeli* in western Germany is likely but could not be verified here. No material from Hessen, Limburg (50°23'12" N, 8°03'34" E), 24 May 1884 (mentioned in DAHL 1908, sub *L. calida*, identification probably correct) was found in ZMB. JACOBI (1954) said that he collected *Lycosa calida*, referring to DAHL & DAHL (1927),

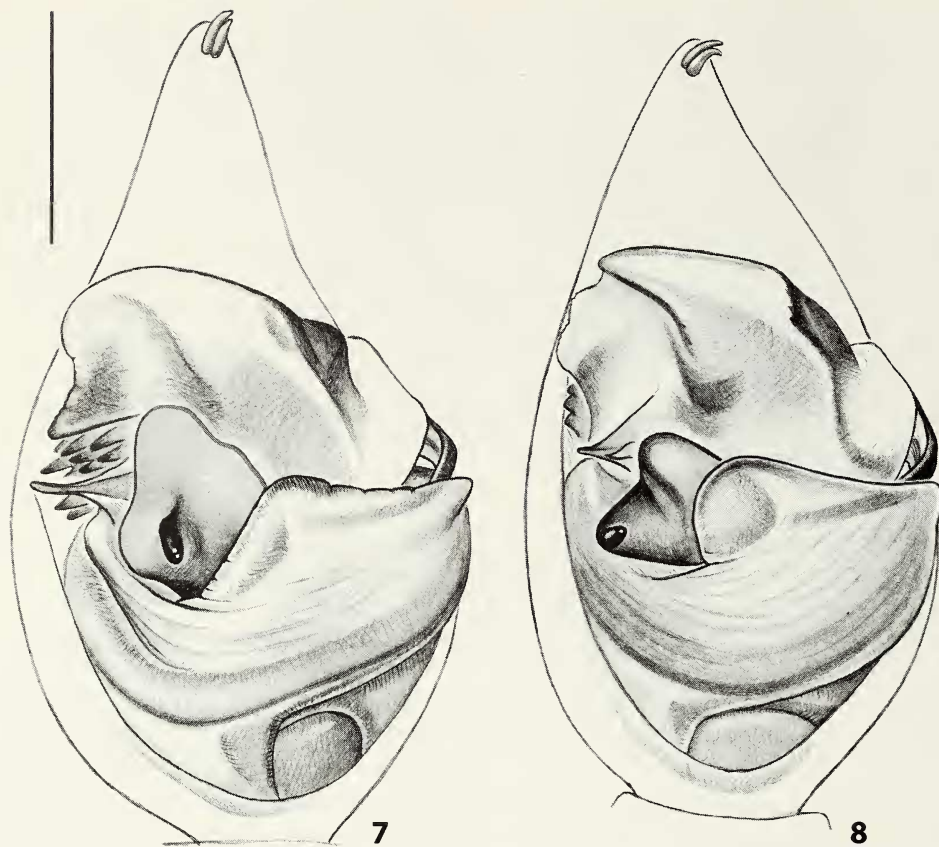
at Bad Ditzgenbach (Württemberg) and at Nollig bei Lorch (Rheinland) (*Pardosa bifasciata* was not mentioned in his list of lycosid species). BRAUN (1955) wrote that he had also collected *Lycosa calida* at Nollig and added a second locality, Raunheimer Forst close to Frankfurt/M. The second locality was mentioned again in BRAUN (1957, sub *Passiena schenkeli*), at the same time reporting *P. bifasciata* from some different localities in the Rhein-Main area. Later, BRAUN (1960) considered *P. bifasciata* and *P. schenkeli* to be a single, variable species. Still later, BRAUN (1969) concluded that he had earlier gone astray, now accepting the two species as distinct (without any additional information on the presence of *P. schenkeli*). A re-examination of several specimens labelled *Pardosa* or *Passiena bifasciata* in Senckenberg-Museum (SMF) did not yield any *Pardosa schenkeli*.

Localities for *Pardosa schenkeli* in Poland

DAHL (1908: 428) referred to the drawing of a female in MENGE (1879, pl. 311), attributed to “*Lycosa bifasciata* C. Koch”, as *Lycosa calida*. At the same time DAHL (1908: 512) stated that the very same drawing by Menge depicts an “*Ar. monticola*” female and that the male on the same plate shows a “*Lycosa calida* Blackw.” It is evident from Menge's plate that the epigyne attributed to “*Lycosa bifasciata*” clearly belonged to some species in the *Pardosa monticola*



Figs 5-6: Hair covering on the abdominal venter in male *Pardosa schenkeli* (5) and male *P. bifasciata* (6). Specimens from same localities as in Figs 3-4. Scale line 0.01 mm



Figs 7-8: Right male palp of *Pardosa schenkeli* (7) and *P. bifasciata* (8). Specimens from Germany: Lausitz (NHRS) (7) and Rheinland-Pfalz (SMF) (8). Scale line 0.25 mm

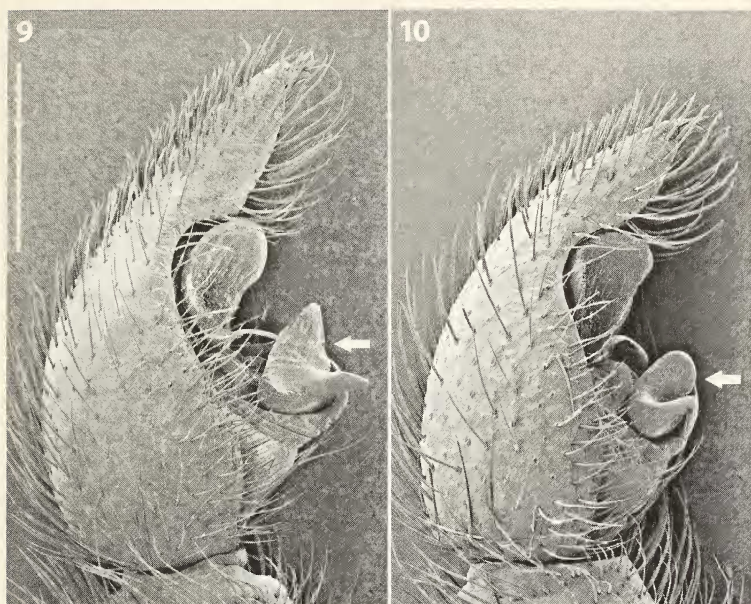
group. The illustrations of the male and female habitus might have been drawn from a pair of *Lycosa calida* sensu Dahl, i. e. *Pardosa schenkeli*, collected at Danzig (now Gdańsk). In the same paper, Dahl presented material of *Lycosa calida* from present-day Poland collected by himself. The illustrations in DAHL (1908: fig. 82a, b) and DAHL & DAHL (1927: figs. 98-102) clearly demonstrate that they were drawn from material of *P. schenkeli*. The material has now been re-examined and Dahl's identification approved: Hela (now Hel), (54°36'26"N, 18°48'19"E), 16 June 1905, 4 ♂ 7 ♀ (three different samples, ZMB 11041, 11042, 11044).

WOŹNY (1976) reported "*Passiena calida*" from Kobyla Góra (51°23'08"N, 17°51'17"E), ENE of Wrocław. Jan Buchar (pers. commn) has re-examined the material (4 ♀) and confirmed its identity with *P. schenkeli*. The habitat in which the specimens were found was typical for *P. schenkeli* (young pine wood with *Juniperus* and *Calluna* on sandy ground).

Is *Pardosa schenkeli* present in the Baltic states?

It is not fully clear whether it is *P. bifasciata*, *P. schenkeli* or both that occur in Estonia. Though VILBAS-TE (1987: 34) explicitly wrote "*Pardosa bifasciata* (C. L. Koch, 1834) (sensu Dahl, 1927)" she included earlier records attributed to "*Lycosa calida*". None of the species are mentioned for Latvia (cf. RELYS & SPUNGIS 2003).

DAHL (1908, 1927) mentioned material of *Lycosa calida* from a locality now situated in Lithuania. These specimens proved to belong to *P. schenkeli*: Heydekrug (now Šilutė) (55°20'38"N, 21°28'25"E), 1 ♂ 1 ♀ 13 June 1905 (ZMB 11043). *Lycosa calida* was later reported by PETRUSEWICZ (1933) from Rudninku forest in Salcininku Region south of Vilnius, where two females were found in a dry sandy pine forest. Also *P. bifasciata* has been recorded from Lithuania. RELYS (2000) recently reported one female from the Curonian spit where it was found on grey dune sward.



Figs 9-10: Right male palp of *Pardosa schenkeli* (9) and *P. bifasciata* (10). Specimens from Sweden: Dalarna (9) and Småland (10). Scale line 0.25 mm



Figs 11-13: Epigyne of *Pardosa schenkeli* (11, 12) and *P. bifasciata* (13). Specimens from Germany: Lausitz (NHRS) (11), Switzerland (MHNG) (12), and Rheinland-Pfalz (SMF) (13). Scale line 0.2 mm

Differences between *Pardosa schenkeli* and *P. bifasciata*

Coloration/pattern

Both species are of about the same body size [carapace length (range, mean $\pm$ SD) of *P. schenkeli* – Switzerland, Valais, Hauten: ♂♂ 2.20, 2.55, 2.70; ♀♀ 2.35–2.85, 2.59 $\pm$ 0.15 (N=16) – Sweden, Dalarna, Furudal: ♂♂ 2.15–2.35, 2.26 $\pm$ 0.07 (N=10); ♀♀ 1.95–2.75, 2.30 $\pm$ 0.23 (N=16)]. The females of the two species have a similar colour/pattern: dark brown carapace with wide yellowish median and lateral bands, latter sometimes with a narrow dark submarginal stripe; abdomen dorsally with wide yellowish median band, in front enclosing a slightly darker light brown lanceolate stripe (cf. Fig. 2, live specimen in Fig. 1). Sides of dorsum dark

brown. Sides of abdomen lighter (greyish to yellowish), with darker mottles. This pattern is also present in the males though the male of *P. bifasciata* has a considerably darker carapace with less clear bands. Moreover, the male of *P. bifasciata* has most of the first (and often also part of the second) leg femora dark (cf. Figs. 3 & 4).

Male abdomen ventrally

- *P. schenkeli*: With short peg-like hairs (Fig. 5). This is associated with the male's abdominal tapping against the substrate during courtship display (KRONESTEDT 2005, with oscillogram from audiorecording of a drumroll).
- *P. bifasciata*: With "mixed" pilosity of hairs (Fig. 6).

Male palp

- *P. schenkeli*: Tegular apophysis with wide, plate-like anteriad branch and narrow, more or less ventrally directed tooth-like branch (Fig. 7) (forming a V-shaped angle in retrolateral view: Fig. 9).
- *P. bifasciata*: Tegular apophysis with smaller anteriad branch which gradually continues into retrolateral branch (Fig. 8) (J-shaped in retrolateral view: Fig. 10).

Epigyne

- *P. schenkeli*: Septum long (Figs. 11, 12), extending further forward than receptacles (Fig. 14).
- *P. bifasciata*: Septum short (Fig. 13), of about the same extension forwards as receptacles (Fig. 15).



Figs 14-15: Epigyne, cleared, of *Pardosa schenkeli* (14) and *P. bifasciata* (15). Specimens from same localities as in Figs 3-4. Scale line 0.2 mm

Habitat

Pardosa schenkeli and *P. bifasciata* are both confined to habitats that are more or less open and, by human concept, considered more or less xerothermic.

In northern Europe, *P. schenkeli* has been found in localities associated with sandy *Pinus silvestris* heaths or dunes, carrying a vegetation including *Cladonia* spp., *Calluna vulgaris*, and/or *Arctostaphylos uva-ursi* (HAUGE & KVAMME 1983, PALMGREN 1939, 1977, KRONESTEDT 2005). Also the coastal localities in present Poland (DAHL 1908) were sandy, close to pine woods, or dunes with *Ammophila arenaria*. The inland locality in Poland was on sandy ground with pines and *Calluna*. In the Alps, *P. schenkeli* has been found at high altitudes, in conifer woods and pasture-land between 1900 and 2400 m a.s.l. (LESSERT 1910).

P. bifasciata is, according to HÄNGGI et al. (1995), a species that has frequently been found on meadows, especially grasslands on rather poor, dry soil ('Magerrasen'), forest steppes, and vineyards ('Weinberge'). In Sweden it has been found in various dry situations, including sandy habitats similar to those in which *P. schenkeli* may occur (KRONESTEDT 2005).

Acknowledgements

My thanks go to Mr. Theo Blick, Hummeltal, for information and advice, to Dr. Jason Dunlop, Museum für Naturkunde, Berlin, Dr. Bernd Hauser, Muséum d'histoire naturelle de Genève, Geneva, Dr. Peter Jäger, Senckenberg-Museum, Frankfurt/M., Dr. Jörg Spelda and Mr. Stefan Friedrich, both Zoologische Staatssammlung, Munich, Germany, for loans of material in their care. I am very grateful to Prof. Dr. Jan Buchar, Prague, for information about material of *Pardosa schenkeli* from Poland, to Ms. Laura Leibensperger, Museum of Comparative Zoology, Cambridge, Mass., for information on collection label, and to Dr. Peter Sacher, Wernigerode, for information about/loan of material in the collection of Gerhard Herzog which is in his care. My thanks also go to Ms. Andrea Klintbjer, Swedish Museum of Natural History, Stockholm, for her skilful drawings to this paper.

References

- BLACKWALL J. (1852): Descriptions of some newly discovered species of Araneidea. – Ann. Mag. nat. Hist. (2) 10: 93-100
- BLICK T. & M. SCHEIDLER (1991): Kommentierte Artenliste der Spinnen Bayerns. – Arachnol. Mitt. 1: 27-80
- BLICK T., R. BOSMANS, J. BUCHAR, P. GAJDOŠ, A. HÄNGGI, P. VAN HELSDINGEN, V. RŮŽIČKA, W. STAREGA & K. THALER (2004): Checkliste der Spinnen Mitteleuropas. Checklist of the spiders of Central Europe (Arachnida: Araneae). Version 1. Dezember 2004. – Internet: http://www.arages.de/checklist.html#2004_Araneae
- BRAUN R. (1955): Zur Spinnenfauna von Mainz und Umgebung, mit besonderer Berücksichtigung des Gonsenheimer Waldes und Sandes. – Jb. nassau. Ver. Naturk. 92: 50-79
- BRAUN R. (1957): Die Spinnen des Rhein-Main-Gebietes und der Rheinpfalz. – Jb. nassau. Ver. Naturk. 93: 21-95
- BRAUN R. (1960): Neues zur Spinnenfauna des Rhein-Main-Gebietes und der Rheinpfalz. – Jb. nassau. Ver. Naturk. 95: 28-89
- BRAUN R. (1969): Zur Autökologie und Phänologie der Spinnen (Araneida) des Naturschutzgebietes "Mainzer Sand". – Mainzer naturwiss. Arch. 8: 193-289
- DAHL F. (1908): Die Lycosiden oder Wolfspinnen Deutschlands und ihre Stellung im Haushalte der Natur. Nach statistischen Untersuchungen dargestellt. – Nova Acta, Abh. Kaiserl. Leop.-Carol. Dtsch. Akad. Naturforsch. 88 (3): 175-678, Taf. 17
- DAHL F. & M. DAHL (1927): Spinnentiere oder Arachnoidea II: Lycosidae s. lat. (Wolfspinnen im weiteren Sinne). – Tierwelt Deutschlands 5: 1-80
- HÄNGGI A., E. STÖCKLI & W. NENTWIG (1995): Lebensräume mitteleuropäischer Spinnen/Habitats of Central European spiders. – Misc. faun. helv. 4: 1-460
- HAUGE E. & T. KVAMME (1983): Spiders from forest-fire areas in southeast Norway. – Fauna norv. (B) 30: 39-45
- HERZOG G. (1968): Beiträge zur Kenntnis der Spinnenfauna der südlichen Mark. In: Beiträge zur Tierwelt der Mark 5. – Veröff. Bezirkheimatmuseum Potsdam 16: 5-10
- ISAIA M. (2006): Check-list delle specie di ragni (Arachnida, Araneae) della Valle d'Aosta con una nuova segnalazione per la fauna italiana. – Rev. Valdôtaine Hist. nat. 59 (2005): 25-43
- JACOBI H.P. (1954): Beitrag zur Kenntnis der Spinnenfauna von Geisenheim (Rheingau) und Umgebung. – Jb. nassau. Ver. Naturk. 91: 53-64
- KRONESTEDT T. (2005): *Pardosa schenkeli* – en för Sverige ny vargspindelart. [*Pardosa schenkeli* Lessert (Araneae, Lycosidae), a wolf spider new to Sweden.] – Fauna Flora, Uppsala 100 (4): 36-41
- LESSERT R. DE (1904): Observations sur les Araignées du bassin du Léman et de quelques autres localités suisses. – Rev. suisse Zool. 12: 269-450
- LESSERT R. DE (1910): Catalogue des Invertébrés de la Suisse. Fasc. 3. Araignées. Museum d'histoire naturelle de Genève, Genève, 635 pp.

- MAURER R. & A. HÄNGGI (1990). Katalog der schweizerischen Spinnen / Catalogue des araignées de Suisse. – Doc. faun. helv. 12: 1-33 + 1-376
- MENGE A. (1879): Preussische Spinnen. XI. Fortsetzung und Schluss. – Schr. naturforsch. Ges. Danzig (N.F.) 4: 543-560, pl. 88-91
- MIKHAILOV K.G. (1997): Catalogue of the spiders of the territories of the former Soviet Union (Arachnida, Aranei). Zoological Museum of the Moscow State University, Moscow, 416 pp.
- PALMGREN P. (1939): Die Spinnenfauna Finnlands. I. Lycosidae. – Acta zool. fenn. 25: 1-86
- PALMGREN P. (1977): Studies on the spider populations of the surroundings of the Tvärminne Zoological Station, Finland. – Commentat. biol. 52: 1-133
- PETRUSEWICZ K. (1933): Pogonce (Lycosidae s. l.) okolic Wilna. – Prace Towarz. przy. nauk Wilne 8: 45-74 [not seen, cited from VILKAS A. (2003): Checklist of the spiders of Lithuania. – Internet: http://lietvorai.puslapiai.lt/check_list.htm]
- PLATEN R., B. VON BROEN, A. HERRMANN, U.M. RATSCHKE & P. SACHER (1999): Gesamtartenliste und Rote Liste der Webspinnen, Weberknechte und Pseudoskorpione des Landes Brandenburg (Arachnida: Araneae, Opiliones, Pseudoscorpiones) mit Angaben zur Häufigkeit und Ökologie. – Naturschutz Landschaftspf. Brandenburg 8 (2) Beilage: 1-80
- PRÓSZYŃSKI J. & W. STAREGA (1971): Pająki – Aranei. – Kat. Fauny polski 32: 1-382
- RELYS V. (2000): Contribution to the knowledge of the spider (Araneae, Arachnida) fauna of Lithuania. – Acta zool. lithuan. 10 (2): 47-53
- RELYS V. & V. SPUNGIS (2003): Zirnekļi – Araneae. In: List of Latvian invertebrates. – Internet: <http://www.lubi.edu.lv/les/Aranea.htm>
- SIMON E. (1937): Les Arachnides de France 6 (5). Roret, Paris, pp. 979-1296
- STAREGA W. (2004): Check-list of Polish spiders (Araneae, except Salticidae). – Internet: <http://www.arachnologia.edu.pl/wykazpaj.html>
- THALER K. (2000): Fragmenta Faunistica Tirolensia – XIII. – Ber. nat.-med. Verein Innsbruck 87: 243-256
- TONGIORGI P. (1996): Italian wolf spiders of the genus *Pardosa* (Araneae: Lycosidae). – Bull. Mus. comp. Zool. Harv. 134: 275-334
- TRETZEL E. (1952): Zur Ökologie der Spinnen (Araneae). Autökologie der Arten im Raum von Erlangen. – Sb. phys.-med. Soz. Erlangen 75: 36-131
- TRETZEL E. (1954): Reife- und Fortpflanzungszeit bei Spinnen. – Z. Morph. Ökol. Tiere 42: 634-691
- VILBASTE A. (1987): Eesti ämblikud (Aranei). Annoteeritud nimestik. Valgus, Tallinn. 180 pp.
- WOŹNY M. (1976): Niektóre dane o kilku rzadkich pająkach (Aranei) dla fauny Polski. – Zeszyty przyr. 16: 131-136
- ZYUZIN A.A. (1979): [Taxonomic study of Palearctic spiders of the genus *Pardosa* C. L. KOCH (Aranei, Lycosidae). Part I. Taxonomic structure of the genus.] – Ent. Obozr. 58: 431-447 [In Russian, Engl. transl. in Ent. Rev. 58: 165-185 (1980)]